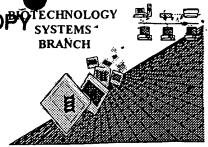
## BEST AVAILABLE COPY SYSTEMS

## RAW SEQUENCE LISTING ERROR REPORT



The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) detected errors when processing the following computer readable form:

Application Serial Number: 09/930,440Source: 08/23/200/

THE ATTACHED PRINTOUT EXPLAINS DETECTED ERRORS.
PLEASE FORWARD THIS INFORMATION TO THE APPLICANT BY EITHER:

1) INCLUDING A COPY OF THIS PRINTOUT IN YOUR NEXT COMMUNICATION TO THE APPLICANT, WITH A NOTICE TO COMPLY or,

2) TELEPHONING APPLICANT AND FAXING A COPY OF THIS PRINTOUT, WITH A NOTICE TO COMPLY

FOR CRF SUBMISSION QUESTIONS, PLEASE CONTACT MARK SPENCER, 703-308-4212.

FOR SEQUENCE RULES INTERPRETATION, PLEASE CONTACT ROBERT WAX, 703-308-4216. PATENTIN 2.1 e-mail help: <a href="mailto:patin21help@uspto.gov">patin21help@uspto.gov</a> or phone 703-306-4119 (R. Wax) PATENTIN 3.0 e-mail help: <a href="mailto:patin3help@uspto.gov">patin3help@uspto.gov</a> or phone 703-306-4119 (R. Wax)

TO REDUCE ERRORED SEQUENCE LISTINGS, PLEASE USE THE <u>CHECKER</u> <u>VERSION 3.0 PROGRAM</u>, ACCESSIBLE THROUGH THE U.S. PATENT AND TRADEMARK OFFICE WEBSITE. SEE BELOW:

## Checker Version 3.0

The Checker Version 3.0 application is a state-of the-art Windows based software program employing a logical and intuitive user-interface to check whether a sequence listing is in compliance with format and content rules. Checker Version 3.0 works for sequence listings generated for the original version of 37 CFR §§1.821 – 1.825 effective October 1, 1990 (old rules) and the revised version (new rules) effective July 1, 1998 as well as World Intellectual Property Organization (WIPO) Standard ST.25.

Checker Version 3.0 replaces the previous DOS-based version of Checker, and is Y2K-compliant. Checker allows public users to check sequence listings in Computer Readable form (CRF) before submitting them to the United States Patent and Trademark Office (USPTO). Use of Checker prior to filing the sequence listing is expected to result in fewer errored sequence listings, thus saving time and money.

Checker Version 3.0 can be down loaded from the USPTO website at the following address: http://www.uspto.gov/web/offices/pac/checker

## Raw Sequence Listing Error Summary

ERROR DETECTED	SUGGESTED CORRECTION SERIAL NUMBER: 09/930, 440
ATTN: NEW RULES CASES:	PLEASE DISREGARD ENGLISH "ALPHA" HEADERS, WHICH WERE INSERTED BY PTO SOFTWARE
Wrapped Nucleics Wrapped Aminos	The number/text at the end of each line "wrapped" down to the next line. This may occur if your file was retrieved in a word processor after creating it. Please adjust your right margin to .3; this will prevent "wrapping."
2Invalid Line Length	The rules require that a line not exceed 72 characters in length. This includes white spaces.
3Misaligned Amino Numbering	The numbering under each 5 <sup>th</sup> amino acid is misaligned. Do not use tab codes between numbers, use space characters, instead.
4Non-ASCII	The submitted file was not saved in ASCII(DOS) text, as required by the Sequence Rules. Please ensure your subsequent submission is saved in ASCII text.
5Variable Length	Sequence(s) contain n's or Xaa's représenting more than one residue. Per Sequence Rules, each n or Xaa can only represent a single residue. Please present the maximum number of each residue having variable length and indicate in the <220>-<223> section that some may be missing.
6PatentIn 2.0 "bug"	A "bug" in PatentIn version 2.0 has caused the <220>-<223> section to be missing from amino acid sequences(s) Normally, PatentIn would automatically generate this section from the previously coded nucleic acid sequence. Please manually copy the relevant <220>-<223> section to the subsequent amino acid sequence. This applies to the mandatory <220>-<223> sections for Artificial or Unknown sequences.
7Skipped Sequences (OLD RULES)	Sequence(s) missing. If intentional, please insert the following lines for each skipped sequence:  (2) INFORMATION FOR SEQ ID NO:X: (insert SEQ ID NO where "X" is shown)  (i) SEQUENCE CHARACTERISTICS: (Do not insert any subheadings under this heading)  (xi) SEQUENCE DESCRIPTION:SEQ ID NO:X: (insert SEQ ID NO where "X" is shown)  This sequence is intentionally skipped
	Please also adjust the "(ii) NUMBER OF SEQUENCES:" response to include the skipped sequences.
8Skipped Sequences (NEW RULES)	Sequence(s) missing. If intentional, please insert the following lines for each skipped sequence. <210> sequence id number <400> sequence id number 000
9_1 Use of n's or Xaa's (NEW RULES)	Use of n's and/or Xaa's have been detected in the Sequence Listing.  Per 1.823 of Sequence Rules, use of <220>-<223> is MANDATORY if n's or Xaa's are present.  In <220> to <223> section, please explain location of n or Xaa, and which residue n or Xaa represents.
0Invalid <213> Response	Per 1.823 of Sequence Rules, the only valid <213> responses are: Unknown, Artificial Sequence, or scientific name (Genus/species). <220>-<223> section is required when <213> response is Unknown or is Artificial Sequence
11Use of <220>	Sequence(s) missing the <220> "Feature" and associated numeric identifiers and responses. Use of <220> to <223> is MANDATORY if <213> "Organism" response is "Artificial Sequence" or "Unknown." Please explain source of genetic material in <220> to <223> section. (See "Federal Register," 06/01/1998, Vol. 63, No. 104, pp. 29631-32) (Sec. 1.823 of Sequence Rules)
PatentIn 2.0 "bug"	Please do not use "Copy to Disk" function of PatentIn version 2.0. This causes a corrupted file, resulting in missing mandatory numeric identifiers and responses (as indicated on raw sequence listing). Instead, please use "File Manager" or any other manual means to copy file to floppy disk.

AMC - Biotechnology Systems Branch - 06/04/2001

OIPE

RAW SEQUENCE LISTING DATE: 08/23/2001 PATENT APPLICATION: US/09/930,440 TIME: 16:49:26

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2 <110> APPLICANT: Betenbaugh et al.
      4 <120> TITLE OF INVENTION: Engineering Intracellular Sialylation Pathways
      6 <130> FILE REFERENCE: PF509P2
C--> 8 <140 > CURRENT APPLICATION NUMBER: US/09/930,440
C--> 9 <141> CURRENT FILING DATE: 2001-08-16
     11 <150> PRIOR APPLICATION NUMBER: 60/227,579
     12 <151> PRIOR FILING DATE: 2000-08-25
     14 <150> PRIOR APPLICATION NUMBER: 09/516,793
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     15 <151> PRIOR FILING DATE: 2000-03-01
     17 <150> PRIOR APPLICATION NUMBER: 60/169,624
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     18 <151> PRIOR FILING DATE: 1999-12-08
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page 4087
     20 <150> PRIOR APPLICATION NUMBER: 60/122,582
     21 <151> PRIOR FILING DATE: 1999-03-02
     23 <160> NUMBER OF SEQ ID NOS: 8
     25 <170> SOFTWARE: PatentIn Ver. 2.1
                                                 These types of errors may exist throughout the sequence listing. Please check subsequent, equences
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                                                    for similar errors.
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                                               10
     41 acg cca atg act gag aat gga gaa atc aac ttt tca gta att ggt cag
                                                                             96
     42 Thr Pro Met Thr Glu Asn Gly Glu Ile Asn Phe Ser Val Ile Gly Gln
                                           25
                      20
     43
     45 tat gtg gat tat ctt gtg aaa gaa cag gga gtg aag aac att ttt gtg
                                                                             144
     46 Tyr Val Asp Tyr Leu Val Lys Glu Gln Gly Val Lys Asn Ile Phe Val
                 35
     49 aat ggc aca aca gga gaa ggc ctg tcc ctg agc gtc tca gag cgt cgc
                                                                             192
     50 Asn Gly Thr Thr Gly Glu Gly Leu Ser Leu Ser Val Ser Glu Arg Arg
                                   55
      51
     53 cag gtt gca gag gag tgg gtg aca aaa ggg aag gac aag ctg gat cag
                                                                             240
     54 Gln Val Ala Glu Glu Trp Val Thr Lys Gly Lys Asp Lys Leu Asp Gln
                                                   75
     57 gtg ata att cac gta gga gca ctg agc ttg aag gag tca cag gaa ctg
                                                                              288
     58 Val Ile Ile His Val Gly Ala Leu Ser Leu Lys Glu Ser Gln Glu Leu
                          85
      61 gcc caa cat gca gca gaa ata gga gct gat ggc atc gct gtc att gca
                                                                              336
      62 Ala Gln His Ala Ala Glu Ile Gly Ala Asp Gly Ile Ala Val Ile Ala
                                          105
                     100
      65 ccg ttc ttc ctc aag cca tgg acc aaa gat atc ctg att aat ttc cta
      66 Pro Phe Phe Leu Lys Pro Trp Thr Lys Asp Ile Leu Ile Asn Phe Leu
                                      120
                 115
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RAW SEQUENCE LISTING DATE: 08/23/2001 PATENT APPLICATION: US/09/930,440 TIME: 16:49:26

output set. N. (onto (onto)
69 aag gaa gtg gct gct gcc cct gcc ctg cca ttt tat tac tat cac 432
69 aag gaa gtg gct gct gcc gcc cct gcc ccg ccc gcc ccg ccc gcc
/1 130 and att cgt gct gag gag ttg ttg gat 480
73 att cct gcc ttg aca ggg gta aag att cgc gcc gas
74 Ile Pro Ala Leu Thr Gly var bys 116 mg 115 160
75 145 cgc agg ttc caa ggg ctg aaa ttc agt gat 528
77 ggg att ctg gat aag ate eee ace eee Gla Gly Leu Lys Phe Ser Asp 78 Gly Ile Leu Asp Lys Ile Pro Thr Phe Gly Leu Lys Phe Ser Asp
79 103 the gag can tot get cag aat cgc cag caa 576
81 aca gat ctc tta gac tte ggg cad egg gob jab Gln Asn Arg Gln Gln 82 Thr Asp Leu Leu Asp Phe Gly Gln Cys Val Asp Gln Asn Arg Gln Gln
100
83 100 624
85 cag tit get tie eit tit ggg gee gas gan Leu Leu Ser Ala Leu 86 Gln Phe Ala Phe Leu Phe Gly Val Asp Glu Gln Leu Leu Ser Ala Leu
8/ 133 act gga gga gtg ggc agt ttt gta tcc aga gat tta 672
89 gtg atg gga gca act gga gca gcg ggo gg Phe Val Ser Arg Asp Leu 90 Val Met Gly Ala Thr Gly Ala Val Gly Ser Phe Val Ser Arg Asp Leu
215
91 210 213 213 93 tca act ttg ttg tca aac tag gttttggagt gtcacagacc aaagccatca 723
93 toa act ttg ttg toa dae eag geeddygang
94 Ser Thr Leu Leu Ser Asn 05 225 230
33 223 canada a constanta de la constanta de l
117 total actual of the
117 aataccaaac tytaacatyt ceeddolysu bushin 117 aataccaaac tytaacatyt ceeddolysu 1429 119 tyctcaytot aactotagaa tygatycttt tygaattcatt togaty 1429
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5 1.0
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131 20 25 132 Tyr Val Asp Tyr Leu Val Lys Glu Gly Val Lys Asn Ile Phe Val
133 35 40 134 Asn Gly Thr Thr Gly Glu Gly Leu Ser Leu Ser Val Ser Glu Arg Arg
( 4/L DSD (-1/V 1111 1111 UL) ULV VIII III
55
55
135 50 55 60 136 Gln Val Ala Glu Glu Trp Val Thr Lys Gly Lys Asp Lys Leu Asp Gln 75 80
135 50 55 136 Gln Val Ala Glu Glu Trp Val Thr Lys Gly Lys Asp Lys Leu Asp Gln

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/930,440

DATE: 08/23/2001
TIME: 16:49:26

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Output Set: N:\CRF3\08162001\1930440.raw

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RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/930,440

DATE: 08/23/2001 TIME: 16:49:26

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	203	att	ctg	gcc	cgg	gga	ggc	agc	aaa	ggc	atc	ccc	ctg	aag	aac	att	aag	192	
	204	Ile	Leu	Ala	Arg	ĞÎy	Gly	Ser	Lys	Gly	Ile	Pro	Leu	Lys	Asn	Ile	Lys		
	205		50					55					60					- 4.0	
	207	cac	ctg	gcg	ggg	gtc	ccg	ctc	att	ggc	tgg	gtc	ctg	cgt	gcg	gcc	ctg	240	
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	219	tct	gaa	gtt	tca	aaa	gac	agc	tct	acc	tca	cta	gat	gcc	atc	ata	gaa.	384	
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W>	224	Phe	Leu	Asn	Tyr	Хаа	Asn	Glu	_Xaa	Asp	Ile	Val	Gly	Asn	Ile	Gln	Ala		
	225		130	'n	K			135					140					400	
	227	act	tct	ycă	tgt	tta	cat	cct	act	gat	ctt	caa	aaa	gtt	gca	gaa	atg	480	•
W>	228	Thr	Ser	Х́аа	Cys	Leu	His	Pro	Thr	Asp	Leu	Gln	Lys	Val	Ala	GLu	Met		
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	237				180					185					190	<b>_</b>		624	
	239	cct	ctg	aat	tta	aat	cca	gct	aaa	cgg	cct	cgt	cga	caa	gac	Egg	gat	624	
			Leu		Leu	Asn	Pro	Ala		Arg	Pro	Arg	Arg	GIU	ASP	тър	ASP		
	241			195					200					205	242	cat	++~	672	
	243	gga	gaa	tta	tat	gaa	aat	ggc	tca	דננ	tat	Dh.	gcu	aaa ta	aya	Uat	LLY	072	
					Tyr	Ğlu	Asn		ser	Pne	туг	Pne	220	гуз	AIG	птэ	пеа		
	245		210					215		~~^	222	+ ~ ~		aat	200	222	tac	720	
	247	ata	gag	atg	ggt	tac	ttg	cag	991	gya	Tria	Trn	Uic	Thr	Thr	Lvc	Cve	, 20	
•			GLu	Met	GTĀ	Tyr		GIII	GIY	GIY	гу	235	птэ	1111	1111	цуз	240		
	249	225					230		-+-	~~+	a+ a		2++	aat	taa	cct		768	
	251	gag	ctg	gaa	cat	agt	gtg	gat	ala Tla	yaı	yry	yat	Tla	) ac	Trn	Dro	att	, 00	
			Leu	GIU	HIS	Ser		ASP	116	АЗР	250		116	пор	112	255			
	253					245			+-+	~~~			aaa	222	a a a		ctt	816	
	255	gca	gag	caa	aga	gta Val	tta	aya	Tur-	011	Tree.	Dha	990 61v	T.VC	Glu	Lvs	Len	00	
			GIU	GIn			ьеи	AIG	тут	265		FIIC	GLY	בעם	270	<b>L</b> 10	204		
	257			a <b>-</b> -	260	ctt	++~	~++	+ 00			ra+	aas	tat		acc	aat	864	
	259	aag	gaa ci	ata Tla	aaa	Tou	Tan	yıl Vəl	Cve	aat	Tla	aut	Glv	Cvs	Len	Thr	Asn		
			GIU	275		теп	ьеи	val	280		116	лэр	011	285	Lou				
	261		-			gta	tos	uus			aaa	σаа	ata			tat	gat	912	
	203	ggc	Cac	all	Lal	yıa	LUA	yya	gae	cua	uuu	944	~ ~ ~				J		

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/930,440 TIME

DATE: 08/23/2001 TIME: 16:49:26

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265 290 295 300	0.00
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269 305 310 315 320	1000
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272 Val Arg Leu Ile Ser Glu Arg Ala Cys Ser Lys Gln Thr Leu Ser Ser	
273 325 330 335	1056
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276 Leu Lys Leu Asp Cys Lys Met Glu Val Ser Val Ser Asp Lys Leu Ala	
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280 Val Val Asp Glu Trp Arg Lys Glu Met Gly Leu Cys Trp Lys Glu Val	
201	1152
283 gca tat ctt gga aat gaa gtg tct gat gaa gag tgc ttg aag aga gtg 284 Ala Tyr Leu Gly Asn Glu Val Ser Asp Glu Glu Cys Leu Lys Arg Val	
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285 370 375 380 287 ggc cta agt ggc gct cet gct gat gcc tgt tcc tac gcc cag aag gct	1200
288 Gly Leu Ser Gly Ala Pro Ala Asp Ala Cys Ser Tyr Ala Gln Lys Ala	
288 GIY Led Sel GIY Ald FIO Ald ASP Ald C/S Sel I/2 Led Sel GIY Ald FIO Ald ASP Ald C/S Sel I/2 Led Sel GIY Ald FIO Ald ASP Ald C/S Sel I/2 Led Sel GIY Ald FIO Ald ASP Ald C/S Sel I/2 Led Sel GIY Ald FIO Ald ASP Ald C/S Sel I/2 Led Sel GIY Ald FIO Ald ASP Ald C/S Sel I/2 Led Sel GIY Ald FIO Ald ASP Ald C/S Sel I/2 Led Sel GIY Ald FIO Ald ASP Ald C/S Sel I/2 Led Sel GIY Ald FIO Ald ASP Ald C/S Sel I/2 Led Sel GIY Ald FIO Ald ASP Ald C/S Sel I/2 Led Sel GIY Ald FIO Ald ASP Ald C/S Sel I/2 Led Sel GIY Ald FIO Ald ASP Ald C/S Sel I/2 Led Sel GIY Ald FIO Ald ASP Ald C/S Sel I/2 Led Sel GIY Ald FIO Ald ASP Ald C/S Sel I/2 Led Sel GIY Ald FIO Ald ASP Ald C/S Sel I/2 Led Sel GIY Ald C/S Sel I/2 Led Sel GIY Ald C/S Sel GIY Ald C/S Sel GIY Ald C/S Sel GIY AND C/S Se	
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old tito. Olkomol.	

VERIFICATION SUMMARY

PATENT APPLICATION: US/09/930,440

DATE: 08/23/2001 TIME: 16:49:27

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Output Set: N:\CRF3\08162001\I930440.raw

L:8 M:270 C: Current Application Number differs, Replaced Current Application Number

L:9 M:271 C: Current Filing Date differs, Replaced Current Filing Date

L:224 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 L:228 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3

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 $L:345 \ M:341 \ W:$  (46) "n" or "Xaa" used, for SEQ ID#:4

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